



UNIVERSITY AT BUFFALO

State University of New York



School of Engineering and Applied Science

The Electrical Engineering Department

DEPARTMENT OF ELECTRICAL ENGINEERING

Graduate Seminar Guest Speaker

Ivan Charamisinou

Research Affiliate

Roswell Park Cancer Institute, Department of Dermatology, Buffalo,, NY

“Red Laser Diode Arrays with Nanoparticle Coatings for Cancer Treatment”

Friday, March 2, 2007

11:00 AM

Knox 109

ABSTRACT

Photodynamic therapy (PDT) of cancer uses photosynthesizing drugs that becomes toxic after activation with 635 nm red light. Effective therapy requires a suitable light delivery system. One promising approach is to use a tiny diode lasers activated inside the patients body. Suitable diode lasers must have a small size, high power, high efficiency and uniform light distribution. As example of ongoing research in laser treatment, I am presenting a high power laser diode that uses ridge wave guide array structure optimized for the better heat dissipation. Special nanoparticle-containing optical coatings were used to modify the laser beam far-field distribution and achieve the uniform illumination.

BIOGRAPHY

Ivan Charamisinou is a Research affiliate at Roswell Park Cancer Institute (Buffalo, NY), designing state-of-the-art systems for optical imaging (fluorescence and reflection spectroscopy) and laser treatment of the skin cancer. He has received M.S. degree in electrical engineering from the Belarusian State University of Informatics, Radio and Electronics (Minsk, Belarus) in 1997. In 2004 he has received a PhD degree from Southern Methodist University (Dallas, TX). The areas of his scientific interests are in-vivo optical imaging, nanoparticles imaging, light delivery systems for photodynamic therapy, optoelectronic packaging, and light scattering theory.